KOLBENSCHMIDT

POSTER INSIDE

PRODUCT KNOWLEDGE

SHAFT PROTECTION SLEEVES –
LONG-LASTING, RELIABLE REPAIRS TO SLIDING SURFACES FOR RADIAL OIL SEALS

PASSION FOR **TECHNOLOGY.**

RHEINMETALL

SHAFT PROTECTION SLEEVES – APPLICATION AND ADVANTAGES

AREA OF APPLICATION

Shaft protection sleeves are used to repair broken-in or worn sliding surfaces for radial oil seals. They provide a cost-effective alternative to replacement or costly remachining of the worn shaft, as they can be easily slid over the worn sliding surface.

Deep run-in grooves often require the diameter to be considerably reduced when remachining the shaft. As a consequence, the original radial oil seal must be replaced by a smaller radial oil seal. By using shaft protection sleeves, this problem can be simply and pragmatically overcome. The shaft need not be dismantled to carry out the repair work or remachined at great effort, and a radial oil seal with the original dimensions can still be used afterwards.

A radial oil seal with the original dimensions can be used after the repair.

FUNCTION AND BENEFITS

Using the shaft protection sleeves in repair work helps to restore a flawless function quickly and durably. The shaft protection sleeve is used as a mating surface for the radial oil seal in the tribological rotation sealing system. This means that the shaft protection sleeve is the third important component for a perfectly functioning seal, alongside the radial oil seal and the lubricant used.

SHAFT PROTECTION SLEEVES OFFER NUMEROUS ADVANTAGES TO THE USER:

- Quick and easy repair, the assembly sleeve is also supplied.
- Cost-effective restoration of the sliding surface on the shaft, as there is no need to remove and remachine the shaft.
- No more costly machinery downtimes, as the repair time is reduced to a minimum.
- Original seal dimension is retained.
- The sliding surface on the radial oil seal is restored functionally and durably.
- Good-value repair technique.
- Secure fit on the shaft due to press fit.
- Optimally processed and wear-resistant surface ensures a long service life.
- Spare part provisioning simplified.

Material
Rust- and acid-resistant steel 1.4301 (AISI 304)

Surface quality / roughness values
R_a = 0.2 to 0.8 µm / R_z = 1 to 5 µm / R_{max} ≤ 6.3 µm

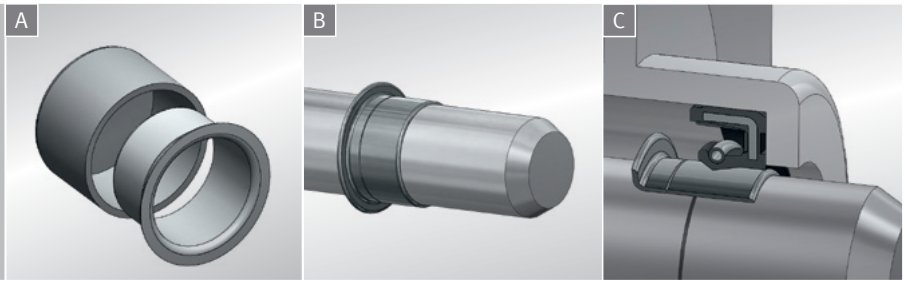
Surface hardness
HV 220 (95 HRB) wear-resistant processing

Surface machining
Spiral-free grind

Wall thickness
0.28 mm thin-walled design

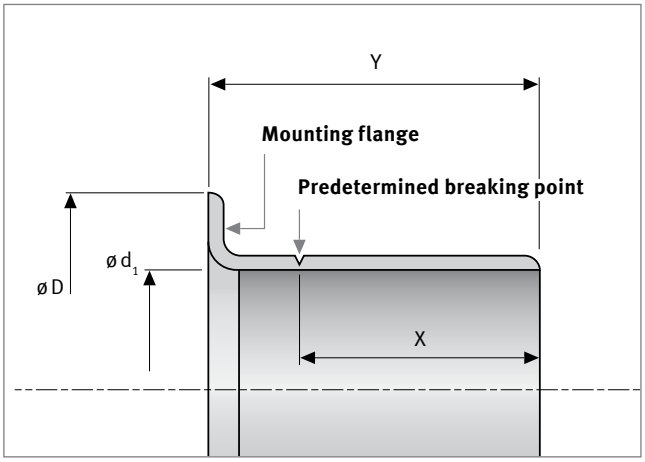
Assembly sleeve material
Normal steel 1.0330 (SAE 1008)

A The assembly sleeve is provided for quick and easy repair.
B Shaft with installed shaft protection sleeve
C Radial oil seal runs on mounted shaft protection sleeve



ORDER INFORMATION

The operating parameters such as temperature, circumferential speed and pressure are affected by the radial oil seal selected. The shaft protection sleeve covers the operating parameters for all conventional radial oil seals. The shaft protection sleeves are individually packed for the diameter range of 12 to 200 mm and are delivered with the assembly sleeve and multilingual assembly instructions. Larger diameters and thicker walls are available on request.



DIMENSIONS FOR SHAFT PROTECTION SLEEVES

Ø d_1 (mm) shaft dimension	Ø D (mm) flange	X (mm) width	Y (mm) total width	Kolbenschmidt no.
12.00	15.50	6.00	8.40	50 008 371
15.00	19.10	5.00	9.00	50 008 383
16.00	18.20	8.00	11.10	50 008 356
17.00	22.20	8.00	11.00	50 008 341
17.93	24.40	8.00	11.00	50 008 361
19.05	24.00	8.00	11.10	50 008 384
20.00	23.60	8.00	11.00	50 008 314
22.00	30.20	6.60	9.10	50 008 372
22.00	30.20	8.00	12.00	50 008 373
24.00	28.70	8.00	11.10	50 008 362
25.00	33.00	8.00	11.00	50 008 327
25.40	31.00	8.00	11.10	50 008 385
26.01	33.40	8.00	12.00	50 008 312
28.00	34.90	9.50	12.70	50 008 334
29.36	34.30	9.50	12.70	50 008 387
29.85	35.60	8.00	11.10	50 008 351
30.00	35.60	8.00	11.00	50 008 311
30.18	35.60	8.00	11.10	50 008 386
31.80	38.10	8.00	11.10	50 008 328
32.00	38.10	8.00	11.10	50 008 300
33.35	40.50	12.70	15.90	50 008 374
34.93	41,60	12.70	15.90	50 008 344
34.93	41.60	13.00	16.00	50 008 303
36.00	45.20	13.00	17.00	50 008 375
38.00	45.20	13.00	17.00	50 008 342
38.10	45.20	9.50	12.70	50 008 388
39.42	47.20	11.10	14.30	50 008 357
40.00	46.90	9.90	12.90	50 008 363
40.08	47.00	13.00	16.00	50 008 309
41.00	49.20	12.70	15.90	50 008 389
41.90	53.00	11.30	14.50	50 008 329
41.90	53.00	14.30	17.50	50 008 345
42.06	53.00	14.00	17.50	50 008 358
42.88	48.40	14.30	17.50	50 008 376

Ø d_1 (mm) shaft dimension	Ø D (mm) flange	X (mm) width	Y (mm) total width	Kolbenschmidt no.
43.66	51.60	14.30	17.50	50 008 352
44.17	52.40	9.50	12.70	50 008 364
44.86	52.40	14.30	17.50	50 008 359
45.00	53.00	14.00	17.00	50 008 307
46.05	53.10	14.30	17.50	50 008 348
48.03	56.00	14.00	17.00	50 008 335
50.00	57.00	14.00	17.00	50 008 310
50.30	58.80	14.30	17.90	50 008 390
50.80	61.10	14.30	17.50	50 008 360
53.98	61.50	12.70	19.10	50 008 365
55.00	62.00	20.00	23.00	50 008 315
57.15	64.30	8.00	11.10	50 008 366
59.13	69.80	19.10	22.20	50 008 391
60.00	70.70	9.40	11.40	50 008 317
60.00	70.70	20.00	23.00	50 008 319
60.33	69.80	13.40	17.40	50 008 349
62.00	71.80	12.70	15.90	50 008 336
65.00	72.40	20.00	23.00	50 008 304
65.10	73.40	19.80	23.80	50 008 392
68.00	79.40	19.10	22.20	50 008 346
69.85	79.40	10.30	14.30	50 008 318
69.85	79.40	19.80	23.80	50 008 347
69.85	79.40	19.80	23.79	50 008 377
69.85	79.40	28.60	31.80	50 008 367
70.00	79.40	20.00	24.00	50 008 330
71.45	81.00	15.10	17.50	50 008 393
72.00	81.90	19.10	22.20	50 008 337
75.00	83.10	15.10	17.50	50 008 324
75.00	84.00	22.00	26.00	50 008 338
76.02	85.30	14.30	17.50	50 008 394
79.38	89.70	17.50	20.60	50 008 378
79.91	89.90	19.10	22.50	50 008 320
80.00	90.00	11.00	15.00	50 008 301
80.00	90.00	21.00	24.00	50 008 331

Ø d_1 (mm) shaft dimension	Ø D (mm) flange	X (mm) width	Y (mm) total width	Kolbenschmidt no.
84.07	93.70	20.60	25.40	50 008 333
84.89	94.00	17.00	21.00	50 008 313
84.89	94.00	21.00	25.00	50 008 321
85.00	90.90	10.10	12.70	50 008 308
90.00	101.60	11.10	13.70	50 008 305
90.00	101.60	13.40	16.90	50 008 316
90.00	101.60	18.00	23.00	50 008 339
90.00	101.60	23.00	28.00	50 008 340
95.00	102.20	21.00	24.00	50 008 322
95.00	102.50	11.90	15.10	50 008 353
95.00	102.40	8.70	12.70	50 008 354
100.00	109.50	20.60	25.40	50 008 323
101.60	111.10	20.60	25.40	50 008 379
105.00	113.50	20.00	23.20	50 008 326
109.93	125.00	12.90	16.50	50 008 302
115.00	127.00	20.60	23.80	50 008 306
117.50	128.60	25.40	31.80	50 008 395
120.00	129.80	20.00	25.00	50 008 325
120.65	127.00	12.70	19.10	50 008 396
125.00	137.20	10.00	14.00	50 008 368
125.00	137.20	26.00	32.00	50 008 380
129.90	139.50	19.10	23.80	50 008 350
130.18	139.50	22.00	25.30	50 008 332
140.00	151.00	20.50	25.40	50 008 343
145.00	154.90	19.10	22.20	50 008 397
150.00	159.00	26.00	30.00	50 008 369
160.00	171.40	25.40	31.80	50 008 355
171.45	181.00	20.60	27.00	50 008 398
177.80	189.90	25.40	31.80	50 008 381
180.01	190.50	33.00	38.00	50 008 370
184.86	197.10	32.00	38.00	50 008 399
190.50	200.00	20.60	25.40	50 008 382
200.03	212.70	34.50	38.10	50 008 400

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FITTING INSTRUCTIONS

SHAFT PROTECTION SLEEVES

REPAIR SHAFT SLIDING SURFACES QUICKLY AND SIMPLY

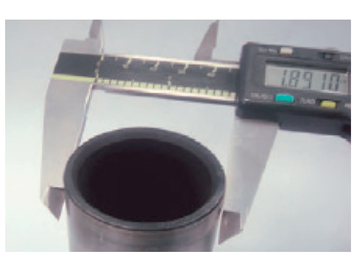
Shaft protection sleeves offer a cost-effective alternative to replacement or time-consuming remachining of the broken-in or worn shafts.

The shaft protection sleeve is slid easily over the worn sliding surface of the shaft. This is often possible whilst the shaft is still installed. After repair, you can use radial oil seals with the original dimensions.

Mounting the shaft protection sleeve is simple and requires little time thanks to the assembly sleeve provided and removable mounting flange.

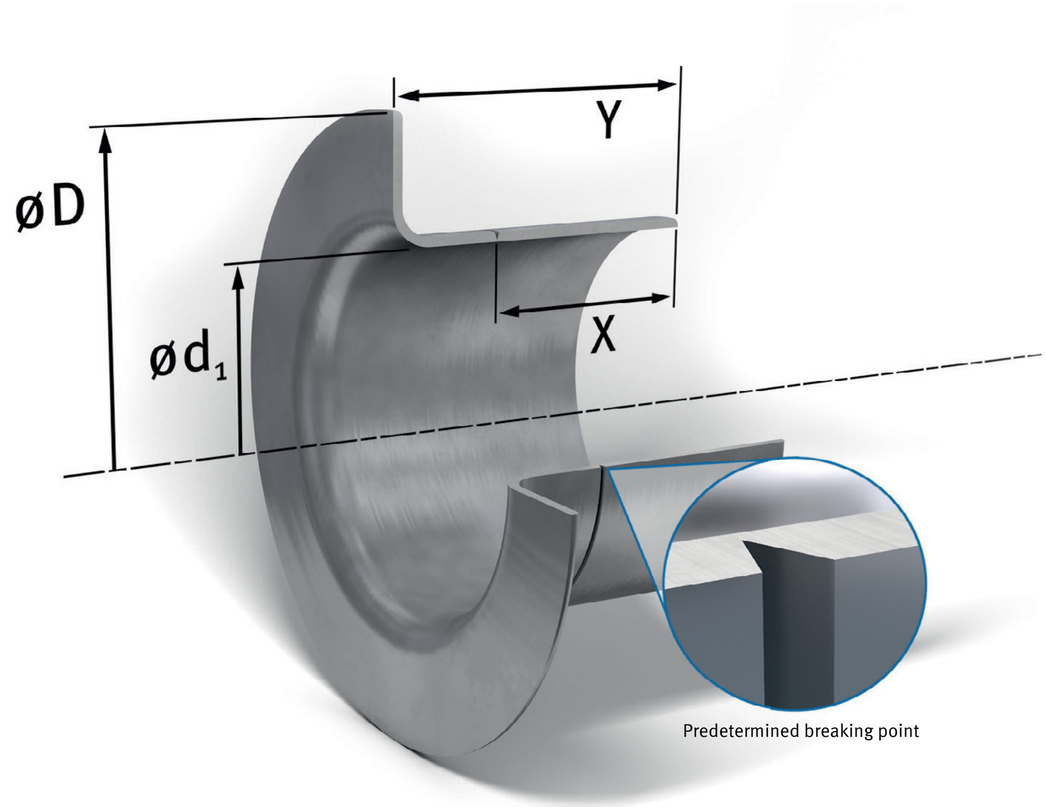
BEFORE MOUNTING

- Clean and inspect the sliding surface of the radial oil seal on the shaft.
- Fill the wear marks, kerfs, grooves or large rough areas with a suitable filling compound.
  Uneven areas on the shaft are pushed through by the thin wall thickness of the shaft protection sleeve and have an adverse influence on the sealing effect.
- Determine the sleeve size.



To choose the correct shaft protection sleeve, measure the shaft diameter at three different points close to the worn section.

Shaft protection sleeves are available in diameters between 12 mm and 200 mm.



Predetermined breaking point

MOUNTING THE SHAFT PROTECTION SLEEVE

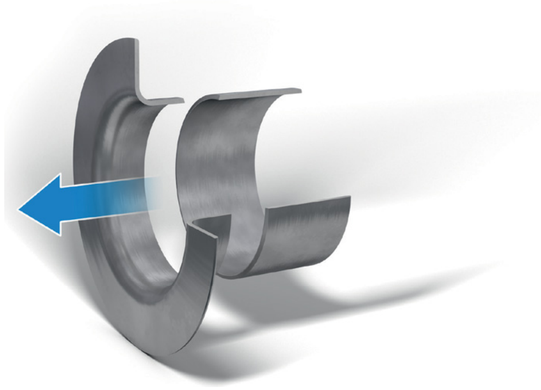
ATTENTION
Shaft protection sleeves may not be placed above grooves, recesses or thread ends in the shaft.

- Lightly grease the surface of the shaft before installation.
- Place the shaft protection sleeve onto the shaft with the flange side.

- Slide the assembly sleeve over the shaft protection sleeve.
  If the assembly sleeve is too short, a tube can be used as an assembly sleeve.
- Slide the shaft protection sleeve onto the assembly sleeve and over the worn position on the shaft.

- Cut into the mounting flange on the shaft protection sleeve as far as the predetermined breaking point using a side cutter and separate the flange at the rough-turned groove.
- Inspect the shaft surface for burrs once more after mounting.

ATTENTION
Mount the shaft protection sleeve carefully and evenly onto the shaft. Damage which occurs during mounting negatively affects the sliding and sealing properties of the radial oil seal.



Removable mounting flange

REMOVING THE SHAFT PROTECTION SLEEVES

The shaft protection sleeves can be removed from the shaft in several ways:

- By warming, the thermally expanded shaft protection sleeve can be easily taken off the shaft without damaging the shaft itself.
- Using controlled hammer blows with the peen along the width of the sleeve, the shaft protection sleeve expands and can be removed easily.
- Tearing off the shaft protection sleeve using a side cutter.
- Slitting open the shaft protection sleeve using a chisel.

ATTENTION
Shaft protection sleeves can not be re-used.

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